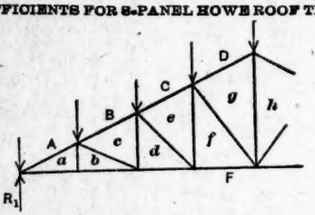
STRESS COEFFICIENTS FOR HOWE TYPE OF ROOF TRUSS—IV

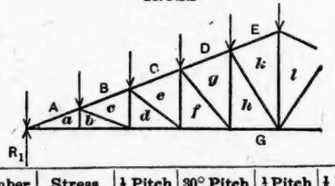
Contributed by Carl E. Schirmer

COEFFICIENTS FOR 8-PANEL HOWE ROOF TRUSS



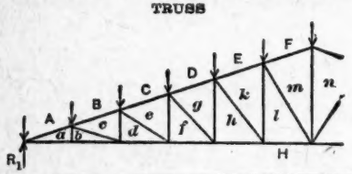
Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	6.30	7.05	7.78	9.40
Bc	Comp.	5.40	6.05	6.68	8.05
Ce	Comp.	4.50	5.05	5.58	6.70
Dg	Comp.	3.60	4.05	4.48	5.35
aF	Tension	5.25	6.10	7.00	8.75
bF					
dF	Tension	4.50	5.25	6.00	7.48
fF	Tension	3.75	4.35	5.00	6.23
ab	Tension	.....	.....	.....	.....
bc	Comp.	0.90	1.00	1.13	1.35
cd	Tension	0.50	0.50	0.50	0.50
de	Comp.	1.25	1.35	1.40	1.60
ef	Tension	1.00	1.00	1.00	1.00
fg	Comp.	1.68	1.73	1.80	1.95
gh	Tension	3.00	3.00	3.00	3.00

COEFFICIENTS FOR 10-PANEL HOWE ROOF TRUSS



Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	8.15	9.00	10.08	12.10
Bc	Comp.	7.25	8.00	8.98	10.78
Ce	Comp.	6.35	7.00	7.85	9.40
Dg	Comp.	5.45	6.00	6.70	8.05
Ek	Comp.	4.50	5.00	5.58	6.23
aG-bG	Tension	6.80	7.80	9.00	11.28
dG	Tension	6.05	6.95	8.00	10.00
fG	Tension	5.30	6.10	7.00	8.75
hG	Tension	4.50	5.20	6.00	7.50
ab	Tension	.....	.....	.....	.....
bc	Comp.	0.90	1.00	1.13	1.35
cd	Tension	0.50	0.50	0.50	0.50
de	Comp.	1.25	1.35	1.40	1.60
ef	Tension	1.00	1.00	1.00	1.00
fg	Comp.	1.68	1.73	1.80	1.95
gh	Tension	1.50	1.50	1.50	1.50
hk	Comp.	2.15	2.18	2.23	2.35
kl	Tension	4.00	4.00	4.00	4.00

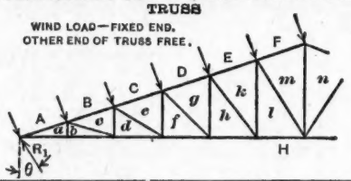
COEFFICIENTS FOR 12-PANEL HOWE ROOF TRUSS



Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	9.90	11.00	12.25	14.75
Bc	Comp.	9.00	10.00	11.15	13.40
Ce	Comp.	8.10	9.00	10.05	12.05
Dg	Comp.	7.20	8.00	8.90	10.70
Ek	Comp.	6.30	7.00	7.80	9.25
Fm	Comp.	5.40	6.00	6.65	8.05
aH-bH	Tension	8.25	9.55	10.95	13.70
dH	Tension	7.50	8.68	9.95	12.45
fH	Tension	6.75	7.83	8.96	11.20
hH	Tension	6.00	6.95	7.95	9.93
lH	Tension	5.25	6.10	6.95	8.70
ab	Tension	.....	.....	.....	.....
bc	Comp.	0.90	1.00	1.13	1.35
cd	Tension	0.50	0.50	0.50	0.50
de	Comp.	1.25	1.35	1.40	1.60
ef	Tension	1.00	1.00	1.00	1.00
fg	Comp.	1.68	1.73	1.80	1.95
gh	Tension	1.50	1.50	1.50	1.50
hk	Comp.	2.15	2.18	2.23	2.35
kl	Tension	2.00	2.00	2.00	2.00
lm	Comp.	2.60	2.65	2.70	2.80
mn	Tension	5.00	5.00	5.00	5.00

COEFFICIENTS FOR 12-PANEL HOWE ROOF TRUSS

WIND LOAD—FIXED END, OTHER END OF TRUSS FREE.



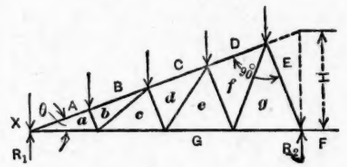
Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	5.00	6.00	7.30	9.30
Bc	Comp.	4.60	5.50	6.50	8.25
Ce	Comp.	4.15	4.90	5.75	7.20
Dg	Comp.	3.75	4.35	5.00	6.15
Ek	Comp.	3.35	3.75	4.25	5.10
Fm	Comp.	2.90	3.15	3.50	4.05
aH-bH	Tension	7.20	8.00	8.98	10.70
dH	Tension	6.30	7.00	7.85	9.35
fH	Tension	5.40	6.00	6.73	8.00
hH	Tension	4.50	5.00	5.60	6.65
lH	Tension	3.60	4.00	4.48	5.30
ab	Tension	.....	.....	.....	.....
bc	Comp.	1.08	1.15	1.25	1.40
cd	Tension	0.60	0.58	0.56	0.55
de	Comp.	1.50	1.55	1.60	1.70
ef	Tension	1.20	1.15	1.13	1.08
fg	Comp.	2.00	2.00	2.00	2.10
gh	Tension	1.80	1.75	1.68	1.63
hk	Comp.	2.55	2.50	2.50	2.50
kl	Tension	2.40	2.30	2.20	2.15
lm	Comp.	3.15	3.05	3.00	3.00
mn	Tension	3.00	2.90	2.80	2.70
Angle θ	.....	46° 30′	40° 45′	36° 15′	30° 0′
Reaction R_1	.....	4.60	4.58	4.55	4.50
Reaction R_2	.....	1.81	1.73	1.68	1.66

To obtain stress in any member, multiply the panel load by the coefficient for that member. All panel loads are considered equal. The pitch of the truss is the height divided by the span.

STRESS COEFFICIENTS FOR PRATT SAWTOOTH AND HOWE TYPES OF ROOF TRUSS—III

Contributed by Carl E. Schirmer

COEFFICIENTS FOR 3-PANEL PRATT SAW TOOTH TRUSSES

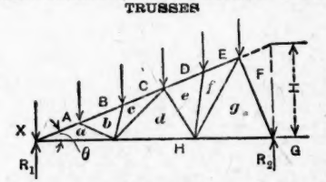


Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	3.20	3.20	3.25	3.50
Bb	Comp.	2.65	2.70	2.80	3.15
Cd	Comp.	1.48	1.45	1.45	1.60
aG	Tension	2.68	2.75	2.90	3.25
cG	Tension	1.93	1.90	1.90	2.00
eG	Tension	1.18	1.03	0.90	0.75
ab	Comp.	0.83	0.85	0.90	0.95
bc	Tension	0.75	0.85	1.00	1.25
cd	Comp.	1.26	1.30	1.35	1.40
de	Tension	1.05	1.15	1.25	1.50
eD	Comp.	2.10	2.08	2.00	1.95
Reaction R_1	.....	2.269	2.092	1.95	1.79
Reaction R_2	.....	2.729	2.640	2.55	2.41
Ld. at XA	.....	0.50	0.50	0.50	0.50
Ld. at AB	.....	1.00	1.00	1.00	1.00
Ld. at BC	.....	1.00	1.00	1.00	1.00
Ld. at CD	.....	1.50	1.37	1.25	1.10
Ld. at EF	.....	1.00	0.87	0.75	0.60
Angle θ	.....	33° 41′	30° 0′	26° 34′	21° 48′

COEFFICIENTS FOR 4-PANEL PRATT SAW TOOTH TRUSSES

Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	4.55	4.60	4.68	5.08
Bb	Comp.	4.00	4.10	4.23	4.73
Cd	Comp.	2.85	2.85	2.90	3.18
Df	Comp.	1.65	1.60	1.58	1.65
aG	Tension	3.80	4.00	4.20	4.73
cG	Tension	3.05	3.13	3.20	3.46
eG	Tension	2.30	2.25	2.20	2.23
gG	Tension	1.55	1.38	1.20	0.95
ab	Comp.	0.85	0.85	0.90	0.93
bc	Tension	0.75	0.85	1.00	1.25
cd	Comp.	1.25	1.30	1.35	1.40
de	Tension	1.05	1.15	1.25	1.50
ef	Comp.	1.68	1.75	1.80	1.85
fg	Tension	1.40	1.50	1.63	1.80
gE	Comp.	2.78	2.75	2.70	2.60
Reaction R_1	.....	3.03	2.80	2.60	2.39
Reaction R_2	.....	3.63	3.52	3.40	3.21
Ld. at XA	.....	0.50	0.50	0.50	0.50
Ld. at AB-BC-CD	.....	1.00	1.00	1.00	1.00
Ld. at DE	.....	1.83	1.66	1.50	1.30
Ld. at EF	.....	1.33	1.16	1.00	0.80
Angle θ	.....	33° 41′	33° 0′	26° 34′	21° 48′

COEFFICIENTS FOR 5-PANEL SAW TOOTH TRUSSES

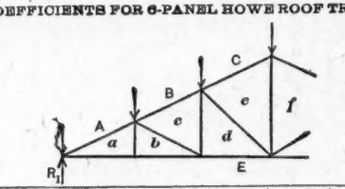


Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	5.90	6.00	6.20	6.75
Bb	Comp.	4.88	4.90	5.05	5.40
Cc	Comp.	4.55	4.70	4.95	5.50
De	Comp.	2.75	2.65	2.70	2.80
Ef	Comp.	2.45	2.45	2.60	2.90
aH	Tension	4.90	5.18	5.55	6.20
dH	Tension	3.40	3.40	3.55	3.70
gH	Tension	1.90	1.70	1.50	1.23
ab	Comp.	1.00	1.05	1.15	1.30
bc	Comp.	0.90	0.90	0.95	1.05
cd	Tension	1.30	1.50	1.70	2.05
de	Comp.	1.65	1.75	1.85	1.90
ef	Comp.	0.90	0.90	0.98	1.05
fg	Tension	2.10	2.30	2.55	3.00
gF	Comp.	3.50	3.40	3.38	3.25
Angle θ	.....	33° 41′	30° 0′	26° 34′	21° 48′
Reaction R_1	.....	3.79	3.50	3.26	2.99
Reaction R_2	.....	4.55	4.40	4.24	4.01
Ld. at XA	.....	0.50	0.50	0.50	0.50
Ld. at AB-BC-CD-DE	.....	1.00	1.00	1.00	1.00
Ld. at EF	.....	2.17	1.95	1.75	1.50
Ld. at FG	.....	1.67	1.45	1.25	1.00

To obtain stress in any member of a saw tooth truss, multiply the panel load *AB*, *BC*, *CD* or *DE* by the coefficient for that member.

The pitch of a saw tooth truss is the height divided by twice the span.

COEFFICIENTS FOR 6-PANEL HOWE ROOF TRUSS



Member	Stress	½ Pitch	30° Pitch	⅔ Pitch	⅓ Pitch
Aa	Comp.	4.50	5.00	5.58	6.75
Bc	Comp.	3.60	4.00	4.45	5.42
Ce	Comp.	2.70	3.00	3.35	4.08
aE-bE	Tension	3.75	4.35	5.00	6.28
dE	Tension	3.00	3.48	4.00	5.04
ab	Tension	.....	.....	.....	.....
bc	Comp.	0.90	1.00	1.13	1.35
cd	Tension	0.50	0.50	0.50	0.50
de	Comp.	1.25	1.35	1.40	1.60
ef	Tension	2.00	2.00	2.00	2.00